Infection Control and the Clinical Epidemiologist

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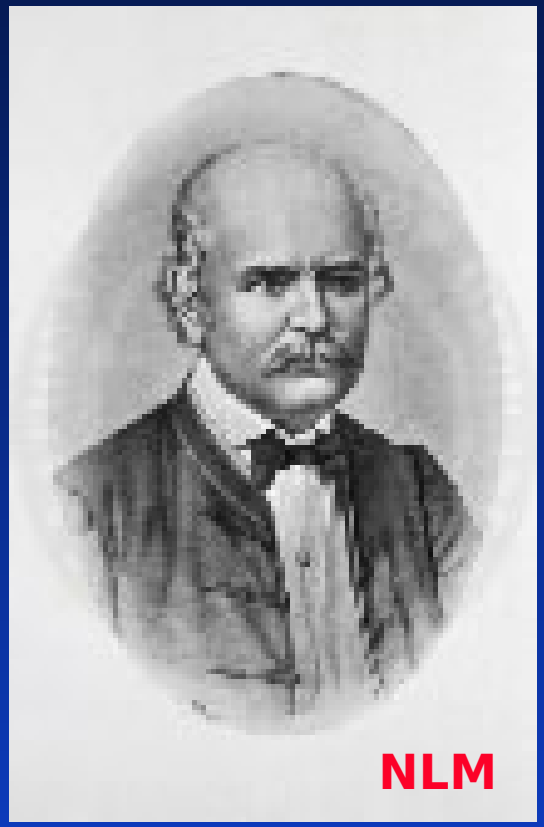
Statement of Program Goals

- Provide education and other services to change attitudes and behaviors of employees when indicated to facilitate the creation of an environment in which consistent optimal standards of care can be achieved.

- Recognize & maintain awareness of guidelines and recommendations that affect infection control epidemiology that are published by professional organizations and allied health services



Early Quality Assessment/ Improvement

Documented per Semmelweis

Mary J. Gilchrist

Infection Prevention and Control Program Purposes

1) Protect patients from adverse outcomes (infectious complications)

2) Protect the patients, healthcare worker, visitors, and others in the environment

3) Comply with local, state, and federal regulations

4) Avoid liability

- duty to protect from adverse outcomes resulting from infection
- not required to guarantee patient will not get an infection
- monitor compliance with organizational standards of care
- establish link with Risk Management

5) Avoid adverse publicity

6) Increase patient satisfaction

- provide patient/family education
- explain isolation procedures
- participate in discharge planning

7) Reduce costs

- identify preventable events
- develop performance improvement plan
- monitor interventions
- report results/cost savings

Recommended Practices for Surveillance

1. Assess the population
2. Select the outcome or process to survey
3. Apply surveillance definitions
4. Collect surveillance data
5. Calculate rates and analyze surveillance findings
6. Apply risk stratification methods
7. Report and use surveillance information

Lee TB, Baker OG, Lee JT, Scheckler WE, Steele L, Laxton C. Recommended practices for surveillance. 1998; 26(3):277-288.

Responsibility & Scope of Service

- Surveillance
- Routine Monitoring
- Quality Control
- Education
- Consultation
- Committee Involvement
- Special Projects
- Regulatory Compliance

Routine Monitoring

- Based on types of services provide by hospital
- Examples include:
  - Sterilization process through biological indicators
  - Dialysis water/dialysate
  - Isolation precautions/compliance
  - Construction/renovation activities
  - Medical (biohazardous) waste disposal

Appropriate Use
of PPE Is Critical
NLM Archives

Quality Control

- Environmental rounds
- Antibiotic utilization activities
- Policy/procedure review
- Blueprint review related to construction/renovation

Purpose of Education

- Prevent or reduce nosocomial infections
- Increased safety for healthcare staff
- Increased safety for family/visitors

Content of Infection Control Orientation

- General infection control expectations
- Infection control program rationale
- Hospital isolation system
  - Standard and Transmission-Based Precautions
- Barrier use

Hospital Reports Appropriately

- **Internally**
  - → **Inpatients**
  - → **Outpatients**
  - → **G.disease reports**
  - → **Preventive Medicine in collaboration with Infection Control**
- **Externally**
  - → **Public health authorities**
  - → **Official Navy reporting**

- **Tuberculosis**
  - **Disease process**
  - **Scope of problem**
    - **Incidence in**
      - **U.S.A.**
      - **Washington, D.C.**
  - **Isolation**
  - **Respiratory protection**
  - **Tuberculin skin testing**
  - **Post-exposure follow-up**

Hospital takes action to prevent/reduce risk of nosocomial infections in patients, employees, & visitors

- Standard and Transmission-Based Precautions
- Empiric precautions can be initiated for any suspected case of epidemiologically important infections
- Employee health program activities integrated with Infection Control to prevent vaccine-preventable infection among personnel, patients, and visitors
- IC, Facilities, MFHC review blueprints for proposed expansion regarding appropriate traffic flow, adequate

Case findings and identification of demographically important nosocomial infections provide surveillance data

- Minutes reflect case findings & identification of demographically important nosocomial infections provide surveillance data
- Annual risk assessment for occupational exposure to TB is documented via *Ad Hoc* Tuberculosis Exposure Control Program Committee

Possible Mission Statement

- Infection Control Program/Service is established to define a realistic framework contributing to organizational effectiveness through ID of risk & risk reduction methods
  - Such support will influence and improve quality of healthcare within the facility by preventing disease transmission via sound epidemiological approach to patient care

- **Program is committed to**
  - **Preventing adverse outcomes i.e. healthcare associated infections and their related events**
  - **Improving patient care by supporting the staff in all areas of the facility when appropriate**
  - **Minimizing occupational hazards associated with delivery of healthcare**
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  - **Fostering scientific-based decision making**

Martha J. Grimes

Program Components

- Leadership and accountability
- Surveillance and outcomes monitoring
- Employee Health Link
- Policy & Procedures Development
- Environmental Controls
- Health Promotion
- Public Health

Leadership and Accountability

- Know what your level of authority is in your organization
- Take the lead in developing new methods or programs to improve outcomes
- Accept accountability for the program

Infection Control Process Is Comprehensive, Encompassing Both Employee Health and Patient Care Services

- Mechanisms supporting this process based on
  - → Current scientific knowledge
  - → Accepted practice guidelines
  - → Applicable laws/regulation
  - → Address infection issues epidemiologically important to Hospital, Branch Medical Clinics, and hospital ship(s)

- → **Logs/records of incidents relevant to infections & communicable diseases**
- → **P/Ps discuss Infection Prevention/Control mechanisms in all patient care + service areas + occupational health including prevention of transmission of infection among pts, employees, medical staff, contractors, volunteers, & visitors and specific env’tal issues**

- **Infection Control Manual**
  - → **Hard copy**
  - → **Secured website**
- **Copies of all written & approved P/Ps for infection surveillance, prevention, and control program maintained in master set of books in Infection Control Office**
- **Current copy of all area-specific infection control committee-approved infection surveillance, prevention, & control P/Ps specific to its pt care activities maintained at local level**

Infection Prevention/Control Programs

- **Targeted surveillance: high risk / high volume**
  - **High level surveillance ICUs via NNIS**
    - **Device-association**
  - **High level surveillance NICU stratified by birthweight**
    - **Device-association**
  - **Surgical Site Infections stratified by risk indices**

Infection Prevention & Control Across the Continuum of Care

- **Purposes of linkage**
  - **Improve quality of care**
  - **Increase efficiency of care delivery**
  - **Improve client satisfaction**
- **How to accomplish**
  - **Identify where your patients go after discharge**
  - **Identify contact**
  - **Develop liaison relationship**
  - **Know differences in infection definitions**

Surveillance: Five Concurrent Ongoing Activities

- All activities in this function performed by qualified individuals and happen simultaneously in an ongoing manner to achieve the goal of reduced nosocomial infections
  - → Identify
  - → Analyze
  - → Prevent
  - → Control
  - → Report

Surveillance and Outcomes Monitoring

- Establish a surveillance program based on
  - organizational needs
  - organizational demographics
- Establish baseline infection rates
- Monitor control measures and outcomes
- Reinforce or revise current practice
- Collaborate with Performance Improvement
- Participate in ***Patient Safety*** Programs
  - Medical Errors
  - Interventional Epidemiology

Uses for Surveillance Data

- Accreditation or Regulatory Compliance
- Research
- Inter and intra-hospital comparison
- Medical-legal review
- Managed care contracts (adjusted to risk)
- Education

Policies and Procedures

- Scientifically sound
- Appropriate for practice setting
- Concise, organized
- Timed for review and revisions
  - Quarterly meetings
  - PE&I Plans based on previous year's data
- Use valid resources
- Involve affected departments

Prevention

- **Clinical Practices**
  - → **Policies**
  - → **Adequate staffing**
  - → **Staff performance**
  - → **Continuing education**
- **Assessment**
  - →**Identify high risk**
  - →**Look for active infection**
  - →**Determine if tests are needed**

- **Environment**
  - → **Policies and procedures**
  - → **Equipment use**
  - → **Laboratories**
  - → **Food and water safety**

Case Findings / Identification of Demographically Important Nosocomial Infections

- MRSA
- VRE
- VISA/VRSA
- *Clostridium difficile*
- *Neiserria meningiditis*
- *Acinetobacter*
- SARS
- Norovirus
- Influenza
- Tuberculosis
- GBS in newborns

US Regulatory/Accrediting Agencies with Infection Control Standards

- Centers for Medicare and Medicaid Services (CMS)
- Occupational Safety & Health Administration (OSHA)
- Food and Drug Administration (FDA)
- Environmental Protection Agency (EPA)
- Department of Transportation (DOT)
- Joint Commission on the Accreditation of Healthcare Organizations (JCAHO)

Actions Taken to Prevent / Reduce Risk of Outbreaks

- **Standard and Transmission-Based Precautions**

- **Employee Immunization Program**
  - → **Vaccinations**
  - → **Tuberculosis Screening and Tuberculin Skin Testing**

Infection Risk

- Minimize risk of disease transmission
  - Healthcare associated infection
  - Community-acquired infection
- Risk of infection with modern technology

Personal Protective Equipment

- ☠ Extraordinary Use of Personal Protective Equipment Not Necessary or Realistic
- ☺ Standard Precautions, including Barriers to Protect Hands & Clothing (Gloves, Cover Gowns / Suits) plus Mask/Respirator if Patients Have Coughing &/or Rash

Facility Compliance to JCAHO Standards Relevant to Surveillance, Prevention, and Control of Infection

NNIS Program

- **30% - 44% decline in hospital-acquired infections over the last 10 years**
- **>10% reduction in surgical site infections**

CDC. Monitoring hospital-acquired Infections to Promote Patient Safety -- U.S., 1990-1999. MMWR 2000;49:149-53.

War of 1898: Ward 3

USNS Comfort

HEPA Filters

Vinyl Curtain/ Tracking

USNS COMFORT
(T-AH 19)

Heating, Air Conditioning, and Ventilation

99-R-xxxx
18 May 2000
Revised to Reflect As Built on USNS Comfort

ITEM NO. 801 Category "A" MSCHQ/N722E/CAL

Isolation Ward Installation

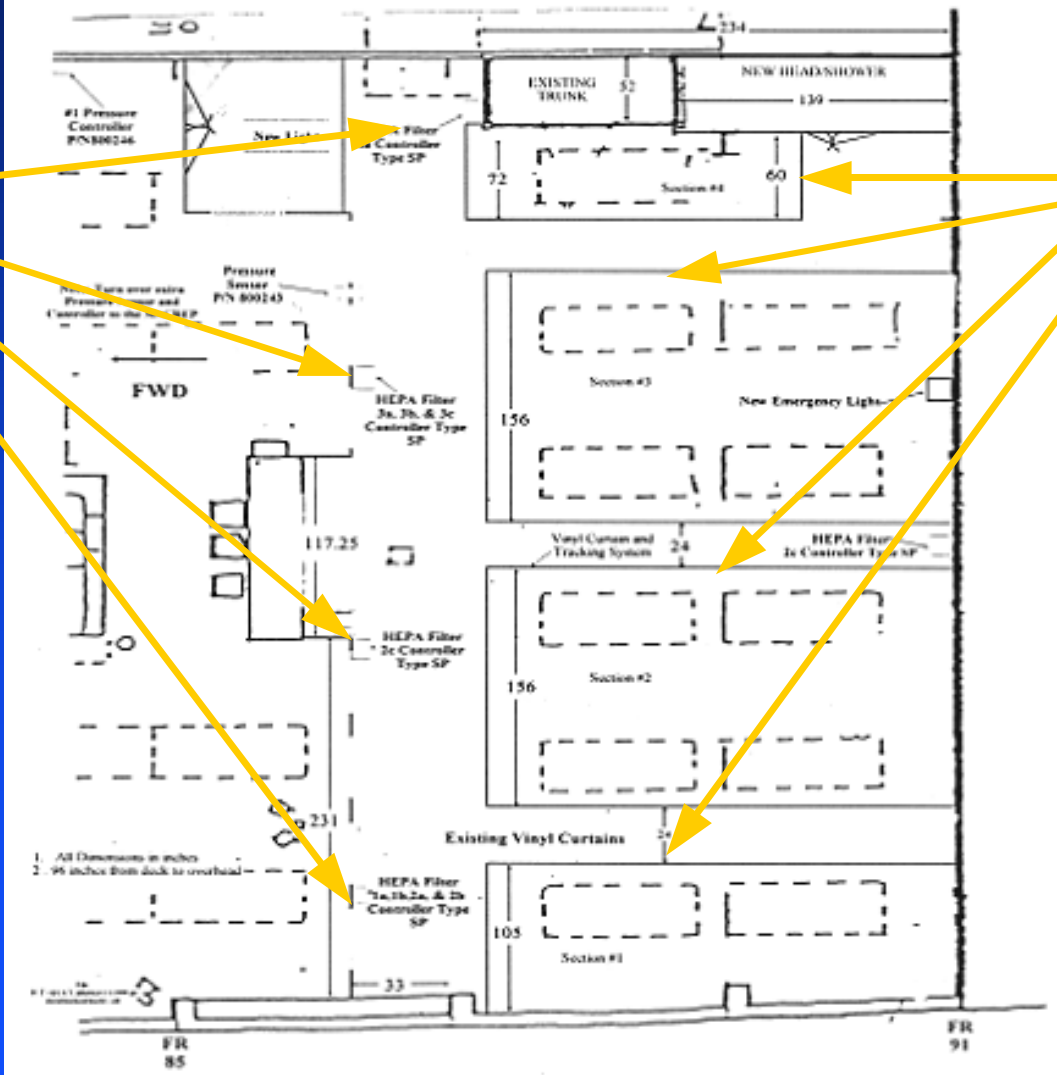


Figure 801-13

Second Edition

MEDICAL MANAGEMENT OF BIOLOGICAL CASUALTIES

HANDBOOK

U.S. ARMY MEDICAL RESEARCH
INSTITUTE OF INFECTIOUS DISEASES

FORT DETRICK
FREDERICK, MARYLAND

AUGUST 1996

Interventional Epidemiology

Intervention

- to prevent an action or outcome or to alter a condition (process)

Epidemiology

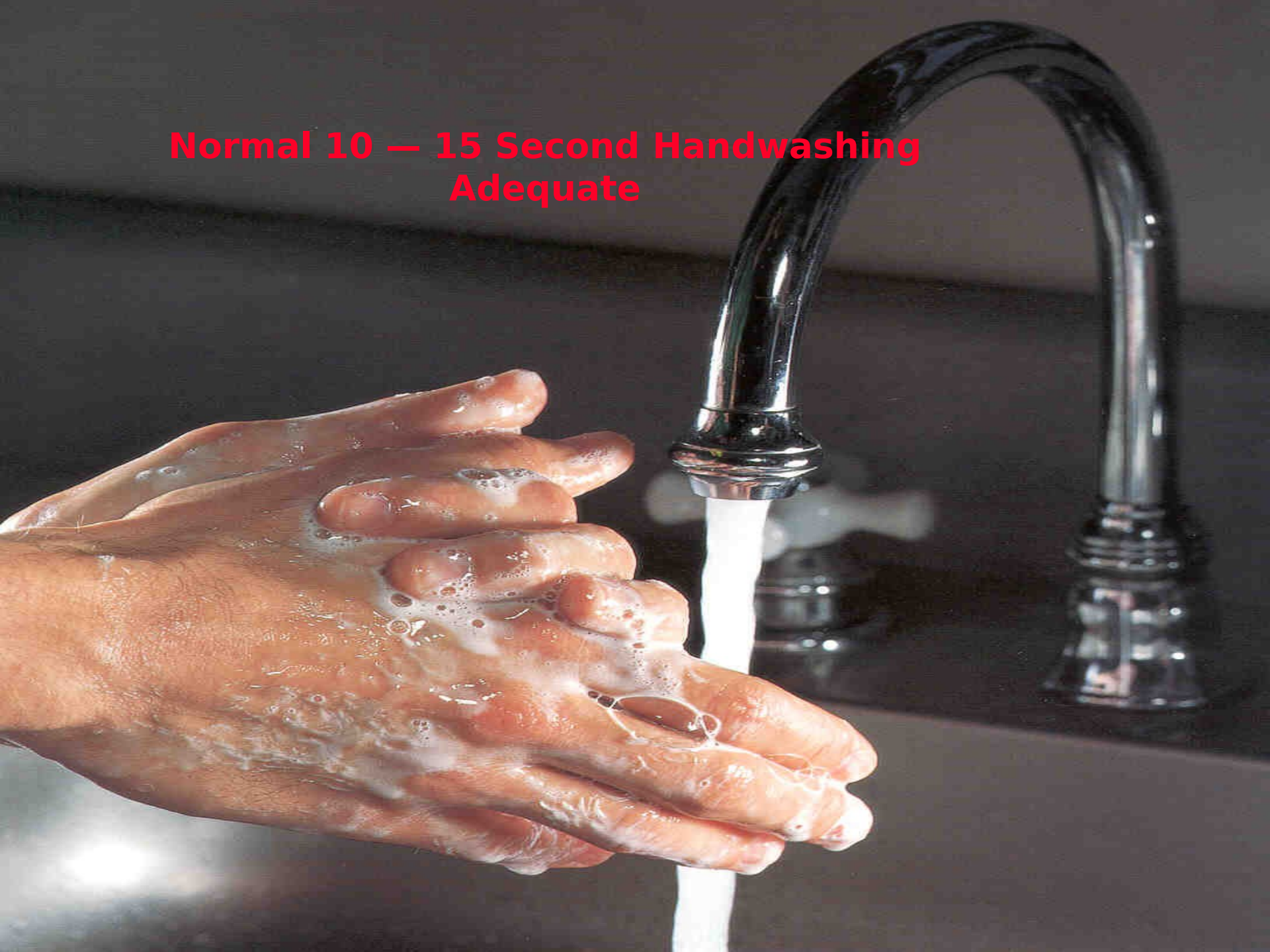
- study of the distribution and determinants of a disease or condition in a defined population

High Level Disinfection and Sterilization

Biofilm via Scanning Electron Micrography

Bloodborne Pathogens Regulation

Administrative Controls
Work Practice Controls
Engineering Controls


Normal 10 — 15 Second Handwashing
Adequate

Triage of Suspected and/or Diagnosed Infections

- Mask patients with:
  - Chronic cough
  - Bloody sputum
  - Night sweats and fever
  - Unexplained rash
- Place into designated Isolation room
- Airborne Isolation for tuberculosis
  - Staff aware of negative pressure room maintenance and monitoring
  - Approved respirators disposed of properly as regulated medical waste

Occupational Health: Appropriate Management of Non-Intact Skin

- Unexplained rash
- Exudative lesions
- Cut or wound previous to scab

Health Promotion

- Participate in organizational immunization programs
  - for employees
  - for patients
- Community education
  - e.g., teaching children about handwashing

Environment

- Designated sterile/clean item storage areas are separated from designated dirty/contaminated item storage.
- Sterile supplies are stored off floor in designated areas
  - Not under sinks
- Procedure carts, exam trays, & tables cleaned with hospital-approved germicide as necessary before set up for next procedure or patient

Environmental Controls

- Work with Housekeeping
  - staff education
  - disinfection product selection
- Participate in Environmental Rounds
  - aesthetics
  - regulated medical waste disposal
  - environmental hazards

- Work with facilities engineers & architects
- Participate in design of new and renovated space
  - AIIRs
- Use available resources
  - AIA Guidelines
  - Construction Tool Kit

Thank You!